

Date	Prepared by	Approved by	Document nos	Revision
11 Oct 2021	Ray Ling	Pavel	MS-9H90-IM-001	03

INSTRUCTION MANUAL MS-9H90-FWB2.3

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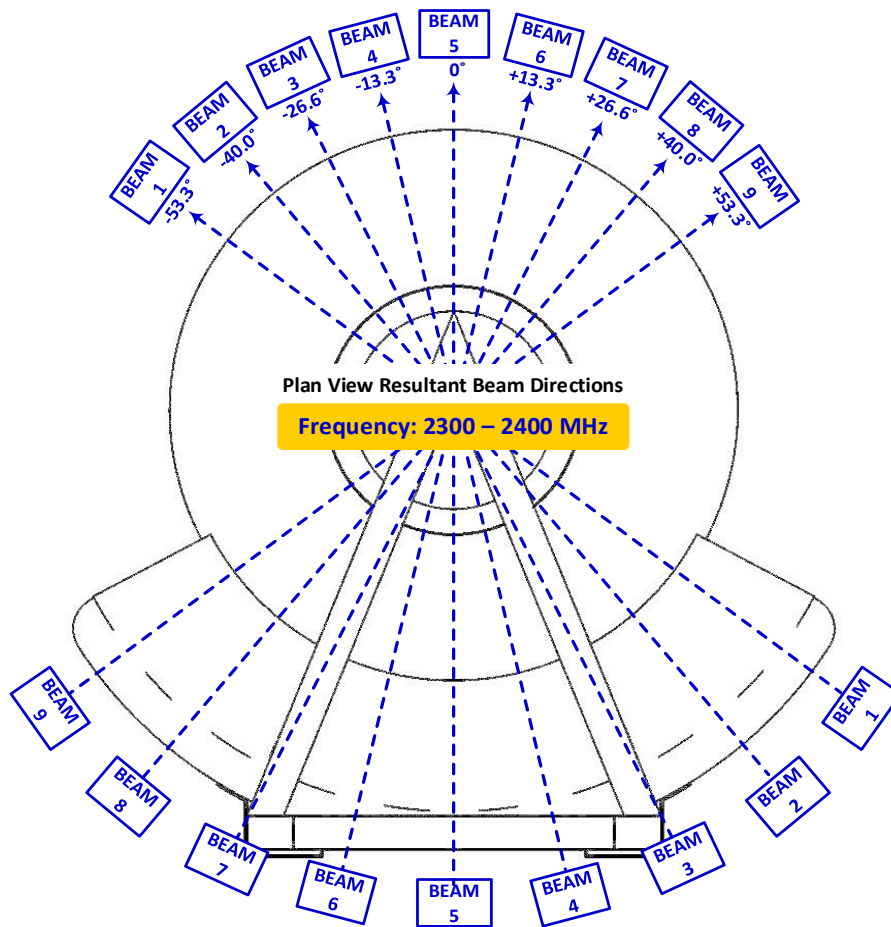
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Revision History:

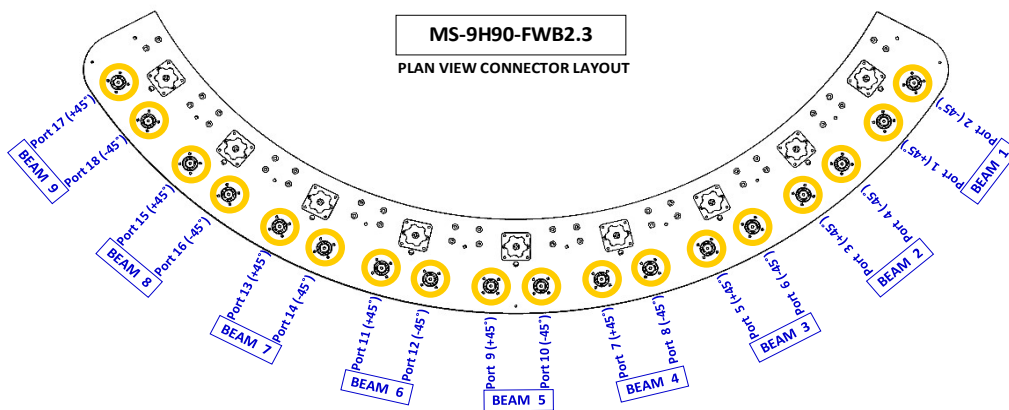
Date	Description	Revised by	Revision nos.
09 Sep 2019	In Manual tilt adjustment process add in the steps for loosening and tighten the tilt stopper screws.	Ray	01
01 Oct 2019	Added RET actuator installation/uninstallation process (Optional) and Antenna leveling process.	Ray	02
11 Oct 2021	General revision and update	Ray	03

1.00 BEAMS & CONNECTORS:

1.10 Plan View Resultant Beam Direction



1.20 Plan View Connector Layout

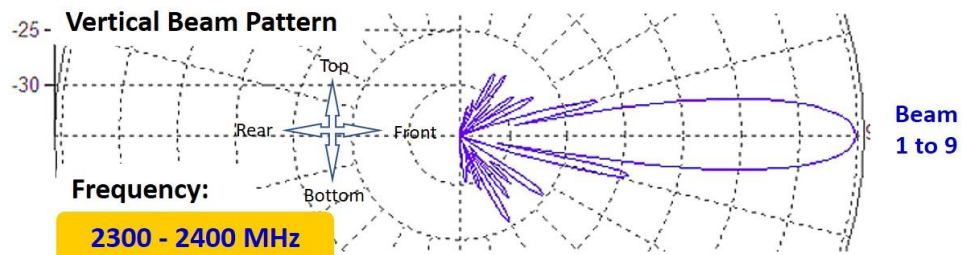


1.30 Connector Ports Table

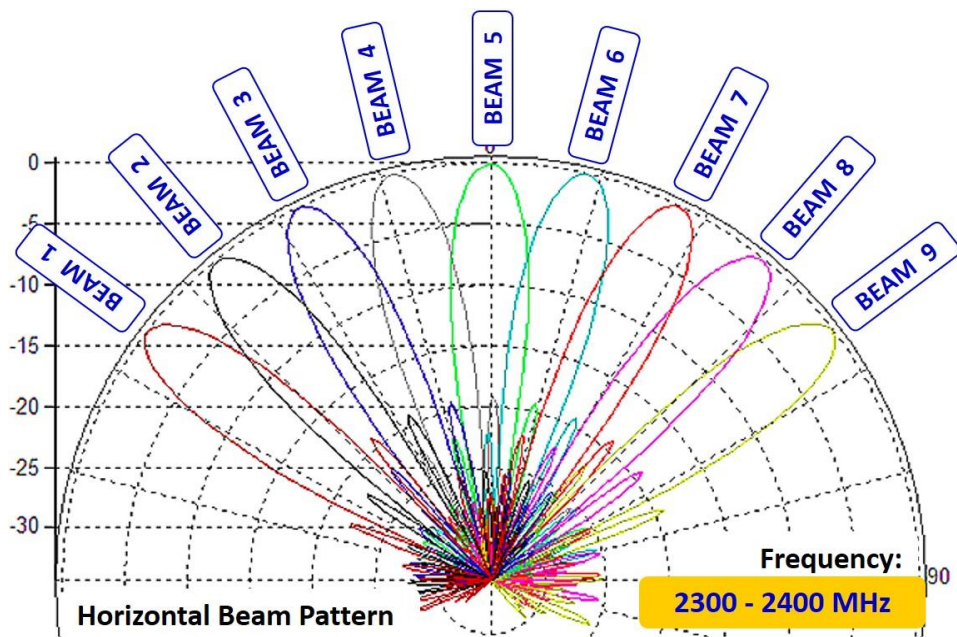
BEAM 9	BEAM 8	BEAM 7	BEAM 6	BEAM 5	BEAM 4	BEAM 3	BEAM 2	BEAM 1
PORT 17 (+45°)	PORT 18 (-45°)	PORT 15 (+45°)	PORT 16 (-45°)	PORT 13 (+45°)	PORT 14 (-45°)	PORT 11 (+45°)	PORT 12 (-45°)	PORT 9 (+45°)
PORT 10 (-45°)	PORT 7 (+45°)	PORT 8 (-45°)	PORT 5 (+45°)	PORT 6 (-45°)	PORT 3 (+45°)	PORT 4 (-45°)	PORT 1 (+45°)	PORT 2 (-45°)

2.00 PATTERN DIAGRAM

2.10 Vertical Beam Pattern

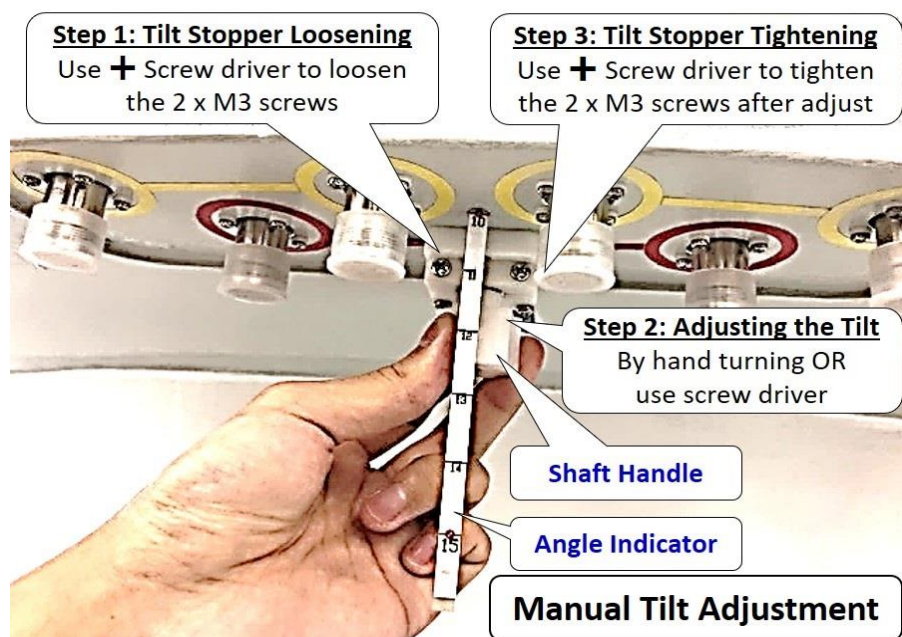


2.20 Horizontal Beam Pattern



3.00 MANUAL TILT ADJUSTMENT

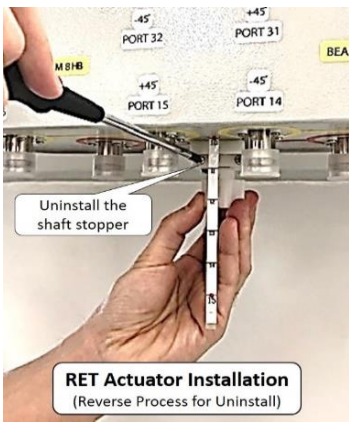
Step 1: Tilt Stopper Loosening. **Step 2:** Adjusting the Tilt. **Step 3:** Tilt Stopper Tightening.



4.00 RET ACTUATOR INSTALLATIONS (Optional)

4.10 Installation Process (Reverse Process for Uninstallation)

Step 1: Uninstall the Shaft stopper



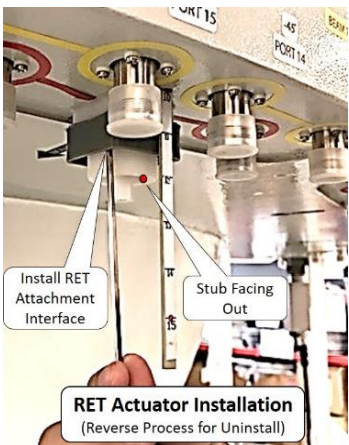
Step 2: Uninstall the Shaft Handle



Step 3: Install the Hex adaptor and screw it on



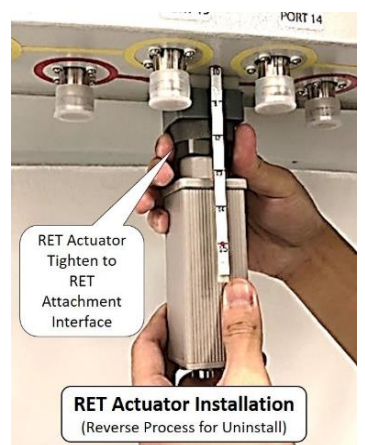
Step 4: Install the RET attachment interface



Step 5: RET Actuator stub gap facing out



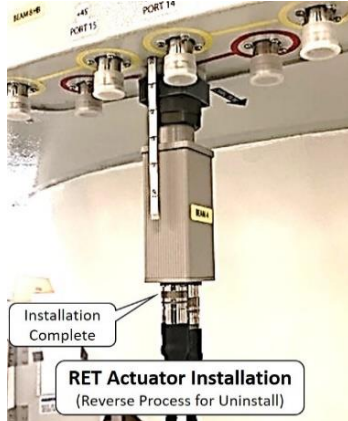
Step 6: RET Actuator Tighten to RET attachment interface



Step 7: Screw and tighten RET cable



Step 8: RET Actuator installation complete.



4.20 RET Actuator kit and tools

RET Attachment Interface (Sub-Assy)



RET Attachment Interface (Sub-Assy)

RET Attachment Interface Kits



Silicon Gasket

RET Cover

Hex Screw
(M4 x 10mm)

RET Attachment
Interface

Shaft Stopper

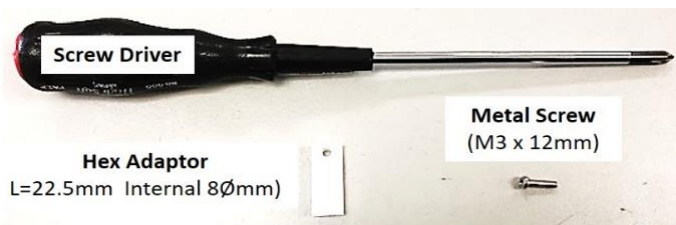
Tighten Screw
(M4 x 20mm)

Fixing Screw
(M4 x 15mm)



Shaft Stopper

Hex Adaptor



Hex Adaptor
L=22.5mm Internal 8Ømm

Metal Screw
(M3 x 12mm)

Shaft Handle



Leadscrew
Shaft Handle



Hex Set Screw
(M3 x 6mm)



M2 Hex Key

RET Actuator



RET
ACTUATOR

RET cable

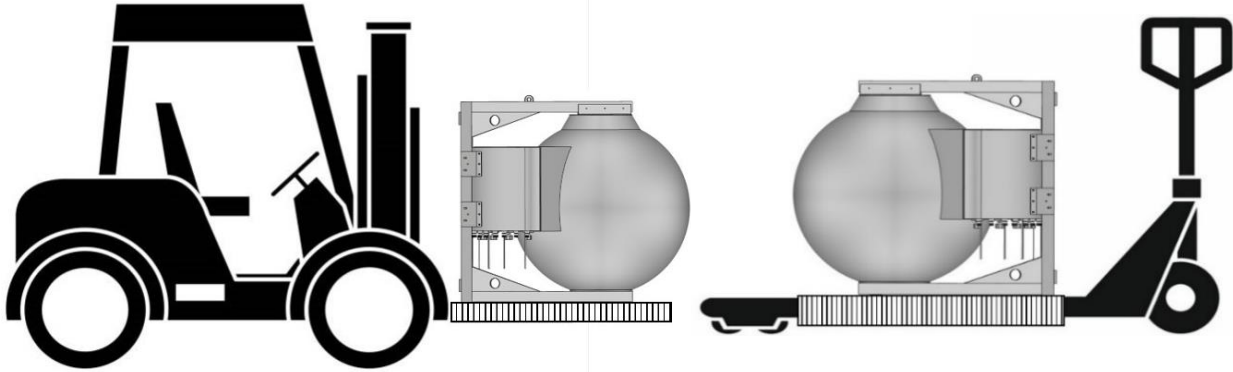


AISG
Cable

5.00 TRANSPORTATION / INSTALLATION

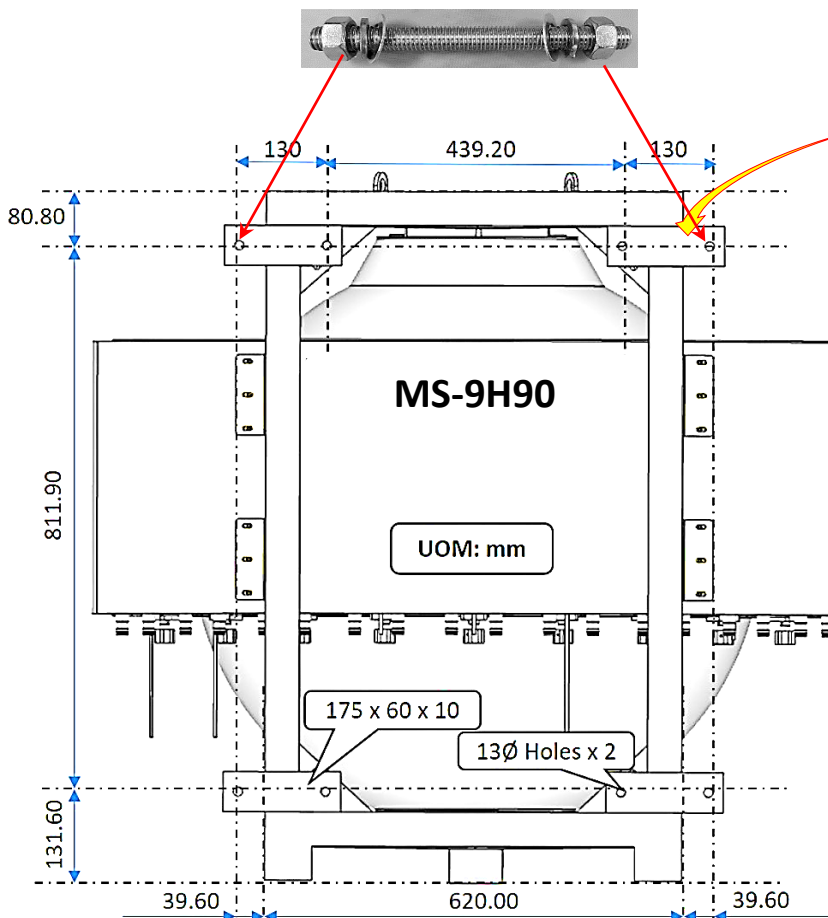
5.10 Transportation (From Point to Point)

Strictly comply to the Local authority and regulatory on Workplace Safety and Health Control and Measure when moving and transportation of large or heavy equipment, appropriate material handling machine should be use. **(Risk Assessment apply for Forklift or Pallet Truck Lifting)**



5.20 Bracket Mounting

Item	Lens/Types	Holes Size	Bracket Qty	<u>OPEN</u> end bolt & nuts sets
1	30cm to 120cm	Ø13mm x 8	4	M12 x 15cm=8sets



Attached the bracket tighten with specified bolts sets.

Important Notes:
End User is require to Custom-Make the additional supporting bracket and tighten to the existing Antenna bracket to meet the deployment needs.

5.30 Installation using a crane

Strictly comply to the Local authority and regulatory on Workplace Safety and Health Control and Measure when performing lifting of large or heavy equipment, appropriate material handling machine should be use and only certified personal should perform the task. **(Risk Assessment require to apply for both Up-Lifting and Down-Lifting.)**

5.31 Lifting the Antenna

The antenna has 2 hook points installed on the top frame (located slightly behind the center of the sphere). These hooks are designed at the center of gravity point of the antenna. A cable, rope can be securely fastened to the hooks and the antenna can be lifted using a crane or forklift as pictured below.

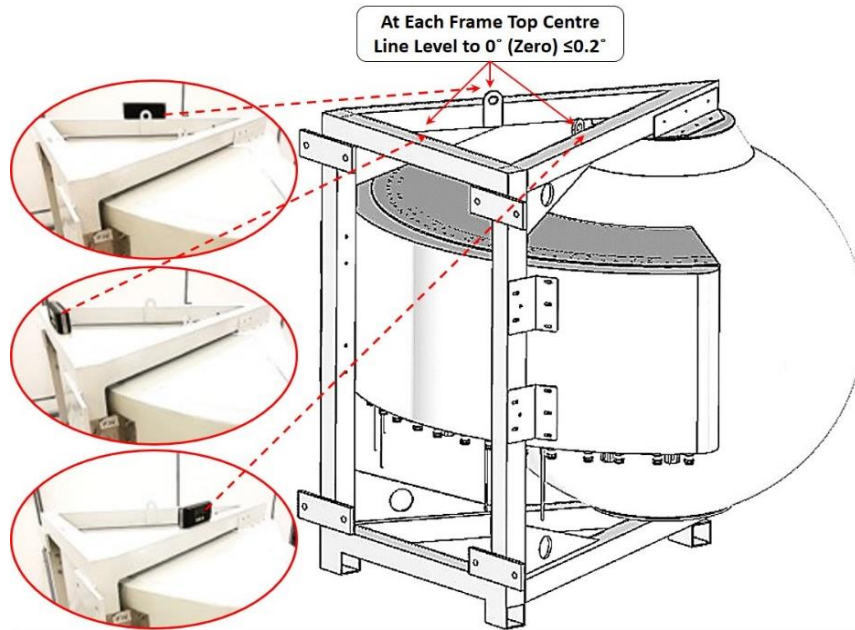


5.40 Antenna Installation

With reference to **Item 5.2 Bracket Mounting Procedure**, End user is required to Custom-Make the additional supporting bracket and tighten it to the existing Antenna bracket to meet the deployment needs.

5.41 Antenna Leveling

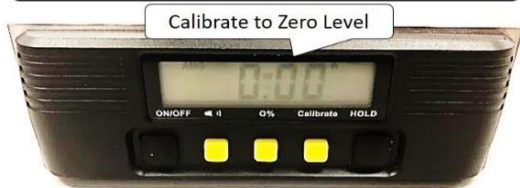
After the Antenna is mounted to the bracket, it is required to be adjusted to 0° (Zero Degree) with $\leq 0.2^\circ$ on 3 sides of the frame top level. (Rear, Right & Left=As shown in picture)



ANTENNA LEVELING ADJUSTMENT (AFTER INSTALLATION)

5.42 Digital Level Gauge Calibration

DIGITAL LEVEL GAUGE



5.43 Adjustment Requirement



ANTENNA LEVELING ACCEPTED



REQUIRE ADJUSTMENT